

unveil concrete adherence difficulties, especially the underlying reasons.

<https://doi.org/10.1016/j.sapharm.2025.02.068>

### Process evaluation of a pharmacist-led intervention aimed at the deprescribing of cardiovascular and antidiabetic medication in a cluster-randomized controlled trial

Jamila Abou<sup>1,\*</sup>, Goloud Echaoui<sup>2</sup>, Jacqueline Hugtenburg<sup>2,\*\*</sup>, Petra Elders<sup>3</sup>, Rob Marum<sup>4</sup>

<sup>1</sup> Amsterdam UMC; <sup>2</sup> Department of Clinical Pharmacology & Pharmacy, Amsterdam University Medical Centers, location VUMC, Amsterdam, the Netherlands; <sup>3</sup> Department of General Practice, Amsterdam UMC, location VU, Amsterdam Public Health Research Institute, Amsterdam, the Netherlands; <sup>4</sup> Department of Elderly Care Medicine, Amsterdam Public Health Research Institute, Amsterdam UMC (location VUmc), Amsterdam, The Netherlands

\* Corresponding author:

\*\* Corresponding author:

E-mail addresses: [j.abou@amsterdamumc.nl](mailto:j.abou@amsterdamumc.nl) (J. Abou), [jg.hugtenburg@amsterdamumc.nl](mailto:jg.hugtenburg@amsterdamumc.nl) (J. Hugtenburg).

**Background:** Deprescribing inappropriate cardiovascular and diabetes medication has shown to be feasible and safe. Healthcare providers (HCPs) often experience the deprescribing of this medication as a challenge and therefore it is still not widely implemented. In the LeMON trial we assessed in a cluster-randomized trial involving 20 community pharmacists whether a training focused on conducting deprescribing-oriented clinical medication reviews (CMRs) decreased the number inappropriate cardiovascular and diabetes medication.

**Purpose:** The aim of this study was to gain insight into the implementation and normalisation of deprescribing of antihypertensives and oral antidiabetics within the context of a CMR.

**Method:** A mixed method process evaluation involving the intervention group pharmacists. They were provided a two hour digital training how to deprescribe the medication involved. Patient experiences and satisfaction were assessed using the Patient Reported Experience Measure (PREM) and Treatment Satisfaction Questionnaire for Medication (TSQM). Semi-structured interviews were conducted with the intervention pharmacists. Interview questions were based on the constructs of the Extended Normalization Process Theory (eNPT).

**Findings:** Overall PREM and TSQM scores were high for both control (n=26) and intervention (n=36) patients. The PREM statement ‘I trust the pharmacist’ was scored as (strongly) agreed by 77.8% and 96.2% (p=0.037) of control and intervention patients. The PREM statement ‘What I would like to change in my medication’ was scored as (very) important by 46.2% and 30.6% (p=0.029) of control and intervention patients. The TSQM question ‘How satisfied or dissatisfied are you with how often you have to use or take the medication?’ was scored as (very or extremely) satisfied by 71.3% and 86.1% (p=0.022) of the control and intervention patients. Pharmacist interviews showed that they had experienced a shared commitment with GPs towards deprescribing. Some had found it difficult to recommend deprescribing in the absence of side effects or when a medical specialist is involved in the treatment of the patient. They would recommend the training to other pharmacists, and were positive on performing more deprescribing-focused CMRs. This, however, would require more CMR time and reimbursement.

**Conclusion:** A deprescribing-focused CMR increases trust in pharmacists. Deprescribing can be performed within the current CMR framework. The results highlight the importance of HCP collaboration in deprescribing cardiovascular and diabetes medication and the need for sufficient resources to support this CMR process.

<https://doi.org/10.1016/j.sapharm.2025.02.066>

### Benefits of Integrating Virtual Patients in Pharmaceutical Care Education to Enhance Self-Medication Consultation Skills

Radiana Staynova<sup>1,\*</sup>, Yana Gvozdeva<sup>2</sup>, Evelina Gavazova<sup>1</sup>, Nelina Neycheva<sup>1</sup>, Katerina Slavcheva<sup>1</sup>, Daniela Kafalova<sup>3</sup>

<sup>1</sup> Department of Organisation and Economics of Pharmacy, Faculty of Pharmacy, Medical University of Plovdiv, Plovdiv, Bulgaria; <sup>2</sup> Department of Pharmaceutical Sciences, Faculty of Pharmacy, Medical University of Plovdiv, Plovdiv, Bulgaria;

<sup>3</sup> Department of Organisation and Economics of Pharmacy, Faculty of Pharmacy, Medical University of Plovdiv, Bulgaria

\* Corresponding author:

E-mail address: [radiana.staynova@mu-plovdiv.bg](mailto:radiana.staynova@mu-plovdiv.bg) (R. Staynova).

**Background:** The development of highly qualified healthcare specialists who can deal with the professional challenges in real practice requires pharmacy students to receive robust theoretical and practical training. Virtual patients are being implemented in pharmacy education across various countries in order to learn different techniques to improve communication skills, identify drug-related problems, assess the pharmacist's role in the self-medication process or assess students' knowledge acquisition.

**Purpose:** The objective of the study was to assess the benefits of integrating virtual patients in pharmacy education, particularly their impact on pharmacy students' knowledge and skills in self-medication counselling.

**Material and Methods:** A systematic review was conducted using PubMed, Scopus and Web of Science databases. The search strategy included the following keywords: (“self-medication” OR “self-care”) AND (“virtual patient” OR “digital patient”) AND (“pharmacy students”) AND (pharmaceutical care education). Topics related to the integration of virtual patients in the education of pharmacy students and the impact on self-medication counselling skills were evaluated. The inclusion criteria were full-text, peer-reviewed research articles, written in English. No publication date limits were set.

**Findings:** A total of 290 articles were identified through electronic databases and 11 met the inclusion criteria. Eight studies were conducted in the USA followed by three in Portugal and one each in Iran and the United Arab Emirates. Most studies employed a pre-post-study design. Key outcomes covered in analyzed articles included improvements in knowledge score, communication, and consultation skills, along with positive perceptions like increased student satisfaction and confidence levels.

**Conclusion:** Using virtual patients in pharmacy education positively impacts students by enhancing their theoretical knowledge as well as their practical communication and decision-making skills. The ability to provide feedback on students' performance after solving specific case scenarios using virtual patients is important for reinforcing their learning and professional development.

**Acknowledgements:** This study is financed by the European Union-NextGenerationEU, through the National Recovery and Resilience Plan of the Republic of Bulgaria, project N° BG-RRP-2.004-0007- C03

<https://doi.org/10.1016/j.sapharm.2025.02.067>

### Therapy-related Determinants influencing Medication Non-Adherence: A Systematic Review

Adriana González Salgado<sup>1,\*</sup>, Fernando Martínez<sup>1</sup>, Victoria García-Cardenas<sup>1</sup>  
<sup>1</sup> Pharmaceutical Care Research Group, University of Granada, Granada, Spain

\* Corresponding author:

E-mail address: [adrianagonzalez@ugr.es](mailto:adrianagonzalez@ugr.es) (A.G. Salgado).

**Background:** Medication non-adherence remains a critical challenge in healthcare, significantly impacting treatment outcomes and increasing healthcare costs. According to the World Health Organization (WHO), the factors contributing to non-adherence are categorized into five dimensions: socio-economic factors, healthcare system-related issues, condition-specific factors, patient-related barriers and therapy-related factors. Despite the recognized importance of therapy-related factors—such as regimen complexity, side effects, and treatment duration—research focusing specifically on this dimension is scarce.

**Purpose:** This systematic review seeks to compile and analyse the latest evidence on the determinants of medication non-adherence, with a particular focus on factors related to the therapy itself.

**Method:** A systematic review is being conducted in accordance with the PRISMA guidelines. A comprehensive search has been performed across the PubMed, EMBASE, Web of Science, and PsycINFO databases using a predefined search strategy. Only studies published in English with full-text availability are included. Records have been screened by reading titles and abstracts and full-text articles are currently being reviewed. Articles are being selected based on predefined inclusion and exclusion criteria, and their methodological quality will be

assessed. Data extraction will be carried out using a structured framework established prior to the review.

**Results/Current Study Status:** The final stage of the full-text review is currently underway. The following outcomes will be presented: therapy-related factors influencing medication non-adherence, as identified in the most recent scientific literature.

**Conclusion/Expected Outcomes:** The study will provide evidence on therapy-related factors affecting medication adherence. Consequently, outcomes of this review could set the foundations for the development of future medication adherence management interventions targeting these factors.

<https://doi.org/10.1016/j.sapharm.2025.02.068>

### Intervention mapping-based development of a pharmacist-led intervention to discontinue chronic antidepressant use

Jacqueline Hugtenburg<sup>1,\*</sup>, Wilma Gottgens<sup>2</sup>, Pierre Bet<sup>1</sup>, Samah Bouarfa<sup>1</sup>

<sup>1</sup> Department of Clinical Pharmacology and Pharmacy, Amsterdam University Medical Center; <sup>2</sup> Radboud University Medical Center

\* Corresponding author:

E-mail address: [jg.hugtenburg@amsterdamumc.nl](mailto:jg.hugtenburg@amsterdamumc.nl) (J. Hugtenburg).

**Background:** In significant numbers of patients the in principle finite treatment of depression with an antidepressant (AD) results in chronic AD use. Discontinuation, however, is a complex and often long-term process since patients not only have to be made aware of their chronic AD use and its consequences but it also requires drawing up patient-tailored AD discontinuation schedules. Although a multidisciplinary guideline is available, it remains challenging for many HCPs to perform an AD discontinuation intervention. This study describes the systematic development of a pharmacist-led intervention to improve AD discontinuation care.

**Purpose (research question):** To develop an intervention including a systematic workflow for pharmacists, in collaboration with general GPs and psychiatrists, to support patients to discontinue chronic AD use.

**Method/study design:** Intervention development was guided by the Intervention Mapping approach. First, a scoping review was performed to assess the determinants of the challenges, i.e. the needs of patients, pharmacists, GPs/psychiatrists and associated nurse-practitioners. Second, intervention objectives were discussed within an expert group. Step three concluded the design of program content tools and step four the design of practical tools.

**Findings:** Major barriers to starting an intervention for AD discontinuation largely consist of poorly defined responsibilities between the different disciplines of HCPs with regard to the identification, invitation and support of patients. They can be addressed by providing tools that can facilitate HCPs in performing the intervention and developing a model collaboration protocol.

The systematic workflow for pharmacists relates to the invitation and support of patients with chronic AD use. For their identification, a protocol for a systematic search in the pharmacy information system was developed. For inviting patients a standardized letter and a protocol for subsequent telephone conversations were developed. Patient support materials include: a topic list for the intake and follow-up consultations, a relapse prevention plan, conversation techniques and a set of basic AD discontinuation schedules. To support the implementation, promotion materials including a flyer and a poster as well as training including patient cases were designed.

The HCP collaboration protocol describes shared patient counselling, responsibilities, the allocation of tasks, intercollegiate communication and support activities in case of withdrawal symptoms or relapse.

**Conclusion:** A pharmacist-led intervention was developed to initiate and complete the process of AD discontinuation. Performing the intervention is facilitated by several pharmacy support tools and a protocol for HCP collaboration. The next step is to test the feasibility of the intervention in daily practice.

<https://doi.org/10.1016/j.sapharm.2025.02.069>

### The geriatric patient: A study on the analysis of potentially inappropriate prescriptions.

Samira Boumediane<sup>1,\*</sup>, Antonio José Braza Reyes<sup>1</sup>, Carlos de Figueiredo Escrivá<sup>1</sup>, Cecilia F. Lastra<sup>2</sup>, Eduardo L. Mariño<sup>2</sup>, Maria Sureda Rosich<sup>3</sup>, Pilar Modamio<sup>2</sup>

<sup>1</sup> Clinical Pharmacy and Pharmaceutical Care Unit, Faculty of Pharmacy and Food Sciences, University of Barcelona (Spain); <sup>2</sup> Clinical Pharmacy and Pharmaceutical Care Unit, Department of Pharmacy and Pharmaceutical Technology, and Physical Chemistry, Faculty of Pharmacy and Food Sciences, University of Barcelona, Spain; <sup>3</sup> Universitat de Barcelona

\* Corresponding author:

E-mail address: [boumediansamira2000@gmail.com](mailto:boumediansamira2000@gmail.com) (S. Boumediane).

**BACKGROUND:** The development of adequation tools for drug treatment optimization is a critical element in the clinical practice to prevent Potentially Inappropriate Prescriptions (PIPs), enhance therapeutic adherence and improve the quality of life for patients aged 65 and older.

**PURPOSE:** To analyse the prescribed medication of polymedicated geriatric patients to detect the possible existence of PIPs.

**METHOD:** A retrospective observational study has been carried out on the medication plans of polypharmacy patients aged 65 or older who attend a community pharmacy in the Metropolitan Area of Barcelona. STOPP/START V3 criteria were employed to systematically analyse the prescribed medications of these patients. This explicit methodology offers a comprehensive list of potentially inappropriate medications (STOPP) as well as potentially omitted treatments (START). The most recent version comprises 133 criteria for medication overuse (STOPP) and 55 for underuse (START).

**FINDINGS:** 32 medication plans, including a total of 137 medications, were collected. According to the first level of the Anatomical Therapeutic Chemical (ATC) classification, medications related to the cardiovascular system (C), digestive system and metabolism (A), and nervous system (N), accounting for 32.45%, 24.83%, and 14.57% respectively, were the most prevalent in the sample group.

The analysis of the medication plans led to the identification of 11 potential STOPP criteria, as well as the suggestion of a possible START criterion.

Some of the possible STOPP criteria detected were: the prescriptions of benzodiazepines for more than 4 weeks; proton pump inhibitors for peptic ulcer disease or uncomplicated peptic esophagitis at full therapeutic doses for more than eight weeks; antimuscarinics for the treatment of overactive bladder or urge urinary incontinence; and the concomitant use of two or more drugs with antimuscarinic/anticholinergic properties. Besides, the possible START criteria detected was the prescription of selective serotonin reuptake inhibitors for severe, persistent anxiety that interferes with functional independence and quality of life.

**CONCLUSION:** The study highlights a critical need: the optimization of the healthcare model in terms of medical care and prescription practices, specifically tailored to the management of polymedicated patients over the age of 65, always with the goal of preventing causes of frailty and iatrogenesis and reducing healthcare costs.

<https://doi.org/10.1016/j.sapharm.2025.02.070>

### Clinical Pharmacist Consulting on HPV Vaccination: A Model of Good Practice Initiative

Svetoslav Stoev<sup>1,\*</sup>, Hristina Lebanova<sup>1,\*\*</sup>

<sup>1</sup> Medical University-Pleven

\* Corresponding author:

\*\* Corresponding author:

E-mail addresses: [svetoslav.stoev@mu-pleven.bg](mailto:svetoslav.stoev@mu-pleven.bg) (S. Stoev), [hristina.lebanova@mu-pleven.bg](mailto:hristina.lebanova@mu-pleven.bg) (H. Lebanova).

**Background and importance:** Human papillomavirus (HPV) is a common virus that can lead to various cancers, most notably cervical cancer. The 9-valent HPV vaccine is one of the most effective tools in preventing HPV-related cancers.(1) However, vaccine hesitancy, lack of patient knowledge, and concerns about safety can limit vaccination uptake. Hospital pharmacists play a crucial role in addressing these barriers by providing accurate, evidence-based information to patients.

**Aim and objectives:** To present and evaluate the patient-centered consultations conducted by hospital pharmacists regarding the 9-valent HPV vaccine, emphasizing patient education, safety, and satisfaction.